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EXAMINER	
PADGETT, MARIANNE L	

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1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,444	SCHULZ ET AL.	
	Examiner	Art Unit	
	MARIANNE L. PADGETT	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-28 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-28, 31-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Applicants' amendments of 12/28/2009 appear to have corrected the 112, second problems as set forth in section 2 of the action mailed 9/25/2009, however while the nomenclature with respect to polymer substrate is now consistent throughout the claims, it is noted that the use of "comprising" or "comprises" in describing substrate compositions in claims 23, 25, 27 & 31-32, make it clear that in these claim sequences the "polymer substrate" may maybe a composite polymeric substrate & may include in its composition components that are not necessarily polymeric, as long as the overall substrate may be called a "polymer substrate".

It is noted that while the amendment to the claims of 12/28/2009 is formally noncompliant, due to the presence of underlining in new independent claim 34, as this improper underlining does not make it unclear what applicants are claiming, the response will be examined on its merits.

It is noted that the main difference between amended independent claim 16 & new claim 34, is that applicants have added the requirement that the formation of the refractive index gradient layer is "in a portion of the substrate itself" in new claim 34, which is not required by claim 16, who scope encompasses deposition of such a layer on the polymer substrate surface or by modifying the structure of the substrate already present. New claim 34 also employs the word "directly" for describing limitation of "impacting the polymer substrate surface during the ion bombardment", although this latter language variation, is not seen to necessitate any different scope.

It is also noted that besides correcting previously noted clarity issues, applicants have broadened the scope with respect to the generation of the high energy ion is by claiming "**comprising** generating the high energy ions by means of an argon and oxygen plasma as the plasma ion source" (emphasis added), since "comprising" language is specifying that the claimed generating means is specifically open to inclusion of other generating means & other plasma ions half also been included by this amendment. This language is present in both independent claims 16 & 34.

Applicants' claims are now directed to reducing the reflectance of **any generic polymer substrate**, without limit to shape or polymer composition, thus any substrate which may be considered polymeric (i.e. monopolymeric, copolymeric, composite substrate that may be layered, have fillers, have additional non-polymeric layers, etc., as long as the polymeric content is sufficient to classify it as polymeric) is claim to be treated by the present scope of plasma generated ions to reduce whatever the initial reflectance was such that it has less than 2% in the wavelength range of 400-1100 nm. Note that exemplary disclosure on page 4, lines 8-13, which disclose what "polymer substrates... preferably comprise" is nonlimiting in scope, as it uses "comprise" which means the substrates described may have other materials in their composition besides they specifically listed preferred polymers, where those other compositions are not necessarily limited to polymers. It is further noted that examples are not definitions. On the other hand the two specific experimental examples on pages 6-8, specify tests performed on 2 different polymers particularly for optical applications, i.e. PMMA & CR39, which are not described by the comprising language & may thus be considered to be only the specific plastic material named, however none of the claims can be considered so limited, including claims 22-26 due to open "comprises" language in this claim sequence do not exclude the presence of other components besides the specific PMMA or CR39 being present in the polymer substrate.

2. The **drawings** are **objected** to because the Y- axes of all the graphs that are supposed to be indicating % transmittance do not use a proper numbering system for American English publications, having inappropriately placed commas (",") in the numbers. While the examiner assumes that "99,0" is intended to indicate -- 99.0 --, commas do not mean decimal places in US publications. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing

figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The **disclosure** is **objected** to because of the following informalities:

on **page 5**, line 35, the examiner notes the use of the acronym "APS" describing "APS plasma treatment" which also relates to the data as presented in figure 1, however the examiner did not find any disclosure which defined what is meant by "APS", hence it is unclear & uncertain what kind of plasma treatment is being referred to. **Page 6**, lines 20 refers to "APF plasma treatment", another undefined acronym & inconsistent with figure 3 which is being discussed

Appropriate correction is required.

4. **Claims 16-28 & 31-34** are rejected under 35 U.S.C. **112, first** paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The examiner did not note any citations of support in applicants' remarks of 12/28/2009 for new limitations added by the amendment to applicants' claims. Review of the original claims does not show use of either the comprising language or the requirement of forming the refractive index gradient layer in a portion of the substrate, nor does the original abstract. The figures are graphs of particular examples that do not appear to directly relate to these issues. In the original specification, disclosure on **page 2**,

lines 25-30 does not provide support for the "comprising" language, and while it does not discuss forming the refractive index gradient layer "in" the substrate or a portion thereof, neither does it provide any deposition with the argon/oxygen plasma that creates the layer, thus is consistent with formation of the gradient layer in the substrate surface, but does not provide for the "a portion" language. On **page 3**, lines 11-22 discussed the importance of the energy of the ions impacting the substrate with respect to the thickness of the gradient layer, with mention of "If the depth of modification is below a certain value, e.g. if the ion energy is too low or the treatment time to short, reflected increases or market markedly in the long-wavelength region of the spectrum....", which *could* imply depth below the substrate surface, but does not actually say that, nor do any of the discussions on this page mention ion implanting, or if the effect created by the ion bombardment from the plasma is required sufficient energy for maybe oxidation to occur, or if the depth referred to is depth from the initial substrate surface or depth equals thickness of a coating; the teachings on this page are silent with respect to these issues. **Page 4**, lines 3-6 disclose preferred plasma operation, but do not provide support for the "comprising..." amendment, and lines 15-26 discussion of ion parameters does not discuss the results of the ion bombardment (i.e. implanting, chemical reaction, deposition assistance, etc.). **Page 5**, lines 1-9, indicate the effect of reduced reflectance, but does not indicate how the ion bombardment causes reduced reflectance (i.e. implanting, chemical reaction, deposition assistance, etc.), while paragraph bridging pages 5-6 discusses using "APS plasma treatment", where what is meant by "APS" is undefined, however the plasma ion source employed is said to be a "vacuum-deposition system", which implies but does not necessitate that something is being deposited, while the end of this paragraph indicates that reflectance reduction is very good when compared with vapor deposited antireflection layer systems, but no such comparison appears to be present in the figures.

Example 1, bridging pages 6-7, is directed to treating a PMMA injection molded substrate with "at least 30 sccm of oxygen... admitted into the DC argon plasma from the APS source, which may be

limited to an argon-oxygen plasma, if we knew for what "APS" stood. The discussion in this at example with respect to lower oxygen contents have been "the quality of the reflection-reduction falls way sharply" implies a reaction with oxygen occurring, but does not necessitate, nor necessarily require such a reaction "in a portion of the substrate itself". Example 2, bridging pages 7-8, which plasma treats a different plastic substrate with the "APS source", discussing operation of "the APS source for at least 500 s with pure argon..." & alternatively with "a mixture of1:1 to 1:2 oxygen/argon is used", but sheds no light on the meaning of "APS", or necessarily supporting "in a portion of the substrate itself". Neither of these examples provide any support for the "comprising..." language in the amendment describing the plasma ion source.

Given the above review of the specification, it appears that applicant's amendments encompass **New Matter**, especially with respect to the "**comprising** generating the high energy ion is by means of an argon and oxygen plasma as plasma ion source" (emphasis added), as no support was found to be indicated for the possibility now encompassed in the claims of the presence of other ions & other ion sources, which they broadening it language "comprising" now includes.

With respect to the "in a portion of the substrate itself" language, while there is no explicit support for forming the gradient refractive layer "in" with respect to the substrate, neither is there any teaching away from the ions reacting with the substrate itself or implanting in a surface portion of the substrate in order to cause the claimed reduction in reflectance, however while the examiner may gas that one of these two options is probably what applicant's process is performing, applicants are provided no clear reasoning or evidence to support their amendment & it should not be the examiner's guess, as to the intended meaning of the original specification that provides the support. Furthermore, the "a portion" language is inclusive of patterned ion bombardment, i.e. bombarding certain surface portions & not other surface portions, which option the examiner has found no support for, thus this new claim language also encompasses **New Matter**.

Note that given the lack of support in the specification for all types of plasmas which **comprise** oxygen + Ar, there is also not support for this broad in scope of plasma treatments to effect the claim scope of all possible polymer substrates to cause the claimed reducing of surface reflectance with the specific ion energies, nor evidence that the claim scope of plasmas would have this claimed effect on the claimed scope of polymer substrates.

5. The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The **nonstatutory double patenting rejection** is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or

claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. **Claims 16-28 & 31-34** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Taniguchi et al**. (4,374,158).

While applicants amendments of 12/28/2009 have clarified their claim language with respect to the "polymer substrate", the broad concepts as set forth in these claims, plus new independent claim 34, were previously covered, i.e. it Applicants' independent claims 16 & 34, while requiring the plasma ion source to necessarily contain both Ar & O_2, was previously noted to be consistent with the scope with respect to the teachings of **Taniguchi et al** (158), since this possible meaning of the previously phrased limitation was already considered. Applicants argued on page 7 of their 12/28/2009 response that their *disclosure* does not suggest direct ion bombardment of a coated substrate, however this is totally irrelevant, as applicants' **claims** do NOT exclude coated substrates, as the generically claimed "polymer substrate", still encompasses **all** polymer substrates, including composite substrates such as treated by Taniguchi et al. (158)'s process, as a polymer substrate may be a multilayered substrate, it may contain fillers or inorganic particles, and still be considered a polymer substrate. As long as applicants claims encompass all polymer substrates, directly impacting the surface of a composite polymer substrate, will be encompassed the directly impacting or the impacting of the claims. Note that as all portions of a composite polymer substrate (e.g. coated substrate &/or multimaterial polymer substrate) are part of that substrate, any ion impacting on any part of a generic substrate, whether it be a coating layer of the composite substrate, or some other part thereof, is still directly impacting the substrate. Arguing aspects of the disclosure that are not necessitated by the actual claim language, cannot be convincing.

As previously set forth, **Taniguchi et al**. (158) teach making shaped or coated articles, that maybe optical articles, such as lenses or windows, etc., using a mixture of fine inorganic particles in a

matrix material that may be polymeric compounds, such as methacrylic acid esters, like polymethylmethacrylate (PMMA), or polycarbonates, like diethylene glycol bisallyl carbonate polymer (CR39), thus read on polymer substrates that comprise claimed materials. The shaped or coated articles are taught to have been suitably cured, then its surface is treated with activated gas containing ions, where those ions may have come from oxygen gas, argon or air (note air contains or comprises both O_2 & argon), where various types of plasma sources (DC, L.F., H.F., microwave at 10^{-2}-10 Torr) are mentioned as useful, particularly "cold plasma". The effective treatment is said to provide lower reflectance & higher transmittance, with exemplary transmittance values in table I including values over 97 or 98 %, where air or oxygen gas plasmas & times including 3 & 10 minutes (i.e. 180 & 600 seconds) were employed. Note that the taught transmittance values necessitate reflectance values in claimed ranges, since over 98 % transmission means that the reflectance cannot possibly be more than 2 %. The thickness of the coating produced by the treatment was taught to be "up to 1000 milli-microns, preferably up to 500 milli-microns", which is taken to mean up to 1 μm or 1000 nm, preferably 500 nm. Particularly see, the abstract; col. 1, lines 5-10; col. 2, lines 20-46, esp. 37-46; col. 4, line 60-col. 5, line 44; col. 6, line 61-col. 7, line 52, esp. 25-41 & 50-52; Exs. on cols. 9-17, esp. table I on col. 17.

To reiterate, particularly note Taniguchi et al. teach specifically claimed polymeric materials teach base material (i.e. matrix material, or substrate material inclusive of PMMA & CR-39 (col. 4, line 60-col. 5, line 17 & col. 6, line 61-col. 7, line 9; where with respect to the claim materials it is taught that the "**transparent shaped article** having an enhanced anti-reflective effect may be in the form of a film, sheet or various molded articles" (emphasis added, col. 7, lines 9-16), with that further taught that an "anti-reflective thin film, the formation of which is one of the objects of the present invention, is obtained by treating with **activated gas the surface portion** of the **transparent substrate** or **coated material**, which **surface portion** comprises as the main ingredient**s** the finely divided particulate inorganic substance and the **vehicle component** for dispersing therein the finely divided particulate inorganic

substance" (emphasis added, col. 7, lines 17-24). Thus, specifically encompasses claimed plasma treatments of polymeric substrates, since the vehicle component that is treated with activated gas to form the anti-reflective thin film may comprise claimed polymers, while the activated gas options are taught to include plasmas including claimed gases (col. 2, lines 37-46; col. 7, lines 25-42), with the thin film thickness is formed overlapping with those claimed (col. 7, lines 43-52). Note that while Taniguchi et al.'s process may be treating a coated substrate, it may also be treating a shaped substrate that is not coated, and since all applicants' polymeric substrates are either completely generic or required to be comprising materials taught by Taniguchi et al., no claimed requirements of applicants' with respect to the substrate or substrate material, can be considered to differentiate from this reference for the *claims as presently written*. That applicants' *specification* does not discuss the presence of the finely divided inorganic material in a polymer matrix &/or the polymer(s) being treated being used as a coating or having a coating thereon, is irrelevant, as the claims as written do not exclude such possibilities, but instead are considered to encompass either or both types of composite polymeric substrates.

Taniguchi et al. differs from independent claims 16 & 34 by not providing information on the energies of the ions as they impinge on the substrate for the various plasmas employed, or discussing the presence of a refractive index **gradient**, and nor the wavelengths involved in the "total luminous transmittance" measurements, however as the optical articles under discussion include window panes, lenses, such as for spectacles, etc., the wavelengths would have been expected to at least encompass visible wavelengths, i.e. 400-700 nm, thus may be considered to cover values in the claimed range or the narrower dependent claim ranges. Alternatively, that the treatment should be with respect to these wavelengths would have been obvious to one of ordinary skill due to the products under consideration, which are generally exposed to such wavelengths & would reasonably have been expected & desired to not reflect light in the wavelengths which are required for their function, as such would detract from &/or distort the light obtained through the taught optical articles. With respect to the gradient issue, a plasma

inherently has ions with a distribution of energies therein, with lesser concentrations at the extremes of the ions' energy distribution. When these ions impinge on the substrate surface, their individual depth of penetration is dependent on their individual energy, the angle of impingement, the composition of the particular substrate material (it's stopping power for particular ions of particular energies), and the like, hence there will *inherently* be a gradient associated with depth of ion penetration due to these old & well-known factors & the energy distribution, which will in turn *inherently* create a compositional gradient & implant induced microstructural gradient formed due to the distribution of penetrating ions & their affects, thus providing a reasonable expectation of such effects producing a graded refractive index layer, since the inherent energy distribution would inherently create a distribution of implantation depth that effects the refractive index by its distribution. With respect to energy, as noted by Taniguchi et al., the plasma conditions employed may be varied, dependent on shape of substrate, particular gas composition & substrate composition, etc., where the reference explicitly suggests that optimum conditions may be readily obtained by experimentation, thus it would've been obvious to one of ordinary skill in the art to conduct such suggested experiments for particular plasma sources used with particular compositions being treated, in order to optimize the parameters, such as energy, time & pressure, with reasonable expectation that such parameters will include various energies, times & pressures as claimed by applicants, due to analogous treatments of analogous substrates for like optical results. It is noted that this is especially relevant to applicants' independent claims 16 & 34, which are treating generic polymer substrate surfaces of no particular polymeric material or shape, inclusive of composite materials, which when further defined in some dependent claims, the substrate need only "comprise" claimed polymeric material, which materials are also suggested by Taniguchi et al.. Particular ion parameters when applied to generic material or generic polymers, or specific polymers comprising unspecified other materials, can not be considered to necessitate any inherent or specific effects, but even specific materials would be relevant to the routine experimentation teachings.

In the paragraph bridging p. 6-7 of applicants' 10/30/2008 response, applicants asserted that in their process of independent claim 16, the process is treating a substrate "which is completely made of an organic polymer without any enclosed other elements...", however this was **& remains** incorrect, since the generic claim of independent claim 16 (& new claim 34) of "polymer substrate" neither explicitly includes, nor explicitly excludes the inclusion of non-polymer additives in the generic polymer substrate, nor the actual surface being treated, **as presently written**. Furthermore, applicants' dependent claims 23, 25 & 31-32 that further describe the polymer substrate **include language**, which **explicitly enables** one to add any other additives or composites (multilayers, patterns, fillers, particles, etc.) of materials, inclusive of organic or inorganic, as desired, as the claims use language such as "the polymer substrate **comprises**..." (emphasis added), thus including the possible use in such polymer substrates of additives such as the fine inorganic particles employed by Taniguchi et al., such that applicants' claims cannot be said to exclude the processes taught therein, especially considering that Taniguchi et al.'s substrate materials may comprise the same polymers specifically claimed by applicants.

On page 6 of applicants' 7/13/09 response, applicants' discussion on of inorganic particles contained in the Taniguchi et al.'s, as had previously been indicated to be **totally irrelevant** to applicants' claims **as written**, because applicants even after having pointed out that their claims are not limited to only polymeric materials in their substrates or on the substrate surfaces, had not and still have (12/28/2009) not amended their claims to eliminate such possibilities. As also discussed above, applicants' recitation of specific ion bombardment parameters when applied to generic polymeric materials, which may comprise unlimited other materials, cannot be considered to have any patentable significance with respect to all polymeric material to which the ion bombardment is applied, in the claim "comprising" scope. Furthermore, even if the substrates were necessarily limited entirely to polymeric material, applicants had not provided any evidence that ***all polymeric materials*** will be affected in the

same manner by the claimed ion bombardment, thus not providing patentable significance to claimed ion bombardment of all polymers.

Also note that applicants' claim language does not specify any particular microstructure for the refractive index gradient layer produced by applicants' claimed ion bombardment, thus encompassing any microstructure that may produce any refractive index gradient effect in a layer & does not exclude surface layers as produced in the process of Taniguchi et al. as discussed above, especially considering that polymer substrates, **as presently claimed**, encompass composite substrates, such as those treated the ion bombardment by the above applied reference.

7. **Claims 16-28 & 31-34** are provisionally rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-7, 12-18 & 24-25 of copending Application No. **11/662,550**.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claim limitations of the two applications are directed to processes of overlapping scope, with the limitations claimed in different orders, such that they are obvious variations on like themes. It is noted copending (550)'s claims have additional limitations directed to deposition of a metal layer, however the presence of such a layer is neither required nor excluded by the present claims (i.e. after performing the process or making the product of the present claims, subsequently depositing a metal layer as claimed in copending (550) may be performed and still read on the current claims, as the claimed process with the claimed effect, thus claimed product is performed, before the subsequent metal layer deposition), hence is not considered a relevant issue for the claims *as presently written*. In copending (550), for examples of overlapping limitations, see claims 1-4 for method of making an optical element including graduated refractive index, with claim 3 directed to thicknesses $\geq$ 50 nm; claim 5 employing plasma with energies $\geq$ 100 eV; claim 6 employing Ar & O_2; claim 7, times $\geq$ 200 seconds; claim 12

treating both sides of an optical substrate; claim 13 for treated substrates being PMMA or CR39; claim 14 for less than 1.5% reflectance in spectral ranges from 400-1100 nm, etc.

Applicants' previous arguments (page 7 of 10/30/08 response) with respect to this rejection, appeared to rely on semantics differences, since copending case 11/662,550's claim to "a radiation-absorbing optical element...", may certainly be considered to encompass or be equivalent to "reducing the surface reflectance of an optical element...", especially when one considers that the products & processes of these two applications employ the same types of plasmas ($(Ar + O_2)$ copending claim 6); may use the same energies (copending claim 5); may apply the plasmas to the same substrate materials (copending claim 13) in order to obtain like results with respect to the refractive index gradient layer formed (claim 14), hence applicants' arguments were utterly unconvincing. As noted, the application of the metal layer in independent claim 1 of the copending case (550) is not significant to the obviousness double patenting, as the present claims do not prohibit the deposition of such a layer on top of the refractive index gradient layer after it is formed.

With respect to this obviousness double patenting (ODP) rejection, applicants argued in their 7/13/09 response that the present applications' earlier filing date means that no obviousness double patenting rejection is warranted, this is incorrect, since as **long as both cases are pending** & the case under consideration is not otherwise allowable (which it is not), the obviousness double patenting rejections when appropriate should properly be made. Other arguments with respect to the ODP rejection appeared to merely repeat previous arguments, thus fail to be convincing.

In the 12/28/2009 response on pages 8-9, applicants appear to be arguing that since copending (550) is directed to manufacturing a "radiation-absorbing optical element...", it is differentiated from the present process & product of "reducing the surface reflectance...", however this is not the case because a polymer substrate with reduced light reflectance as claimed, is entirely consistent with a polymer

substrate structure, which is radiation absorbing, especially where the treatments required in the present process are also employed in the copending process.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. **Other art** of interest that was previously cited for ion treating of the polymeric materials to increase transmission &/or reduce reflectance included: **Ogami**, JP 2008-209442 A, which while not prior art, is directed to plasma or ion beam processing of a resin film to reduce the transmittance at 400-700 nm wavelengths & to create a multilayer absorption structure for optical purposes; **Tregub et al.** (7,314,667 B2), who fluorinate with ion beams or plasma; **Strangl et al.** (4,868,162), who implanted metal ions from liquid sources (In or Sn) or O^+ from a "duoplasmatron", using energies of about 10 keV to locally increase transmission of a filter layer that may be PMMA or PET (col. 6, lines 22-68); and **He et al.** (6,572,935 B1), who bias the substrate (PMMA, polycarbonate, or glass) & treat with plasma containing C, H & Ar to increase transmission thereof. The related copending case to **Schulz et al.** (6,645,608 B2), which has overlapping inventors, was cited as of interest, but reduces reflectance therein the use of inorganic oxide layers.

9. Applicant's arguments filed 12/28/2009 & discussed above have been fully considered but they are not persuasive.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action

is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is **(571) 272-1425**. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/
Primary Examiner, Art Unit 1792

MLP/dictation software

3/8- 9/2010